

DATA SHEET

**AP 650**

Enterprise-grade 4x4, 4-stream, 802.11ax Access Point with Integrated Antennas





**The AP650 is designed for high performance environments – combining the latest in Wi-Fi standards (IEEE 802.11ax technology), the latest in Ethernet standards (2.5 mGig), and Aerohive’s software-defined dual 5 GHz radios for indoor and industrial environments. AP650 has integrated BLE and USB connectivity for enhanced location-driven services and the ability to provide additional wireless access options for IoT and other devices.**

Powered by HiveOS and the innovative distributed Cooperative Control architecture, **AP650** brings the best of capacity and advanced high-efficiency 802.11ax technology. In addition, the integrated BLE and ZigBee radios, plus a USB interface in the access point opens up a multitude of deployment use-cases in IoT and proximity/location-oriented services.

The AP650 benefits from an AI-driven Wi-Fi architecture capable of self-organizing, self-learning, self-healing and self-optimizing in the most challenging environments. Cooperative Control eliminates single points of failure and bottlenecks, delivering stability and unbridled performance, complimenting the capabilities of HiveOS - a stateful L2-L7 DPI firewall for context-based access security, advanced and customizable QoS for traffic optimization, intelligent meshing algorithms, Private Pre-Shared Key (PPSK) and much more.

All Aerohive APs can be centrally managed using Aerohive’s out-of-band cloud network management system - *HiveManager*. HiveManager is an industry-leading and visionary approach to cloud-managed networking, built from the ground up to take full advantage of the SD-LAN and SD-WAN solution from Aerohive. Working in tandem with Aerohive’s HiveOS, HiveManager leverages state-of-the-art cloud technology. Benefit from unified, full-stack management of Wi-Fi, switching and routing, centralized monitoring and configuration, real-time and historical reporting, simplified troubleshooting, integrated RF planner tools and much more.

HiveManager is available in two editions: *Connect* and *Select*. The Connect solution is bundled with Aerohive access points and switches and is free for the lifetime of the device. Connect is the perfect solution for those looking to provide robust, yet enterprise-grade connectivity, without having to invest in the full suite of management features. The optional upgrade to Select unlocks a multitude of advanced features and capabilities that enhance network management, security and visibility.

## Radio Specifications

### Wireless Frequency Range

- USA: 2.400 ~ 2.483 GHz, 5.15 ~ 5.35 GHz, 5.47 ~ 5.725 GHz, 5.725 ~ 5.85 GHz
- Europe: 2.400 ~ 2.483 GHz, 5.15 ~ 5.35 GHz, 5.47 ~ 5.725 GHz
- Japan: 2.400 ~ 2.497 GHz, 5.15 ~ 5.35 GHz, 5.47 ~ 5.725 GHz
- China: 2.400 ~ 2.483 GHz, 5.725 ~ 5.85 GHz

### Modes

- IEEE802.11a 5 GHz OFDM
- IEEE802.11b 2.4 GHz DSSS/CCK
- IEEE802.11g 2.4 GHz OFDM
- IEEE802.11n 2.4 GHz/5 GHz OFDM
- IEEE802.11ac OFDM
- IEEE802.11ax OFDMA

## Channel Support

### 802.11 b/g/n/ax

- US/Canada: 11 (1 ~ 11)
- Europe: 13 (1 ~ 13)
- Japan: 11b: 14 (1~13 or 14th), 11g: 13 (1 ~ 13)
- China: 13 (1 ~ 13)

### 802.11 a/n/ac/ax

- US/Canada: 24 non-overlapping channels (36,40,44,48,52,56,60,64;100,104,108,112,116,120,124,128,132,136,140; 149,153,157,161,165)
- Europe: 19 non-overlapping channel (36,40,44,48,52,56,60,64;100,104,108,112,116,120,124,128,132,136,140)
- Japan: 19 non-overlapping channels (36,40,44,48,52,56,60,64;100,104,108,112,116,120,124,128,132,136,140)
- China: 5 non-overlapping channels (149,153,157,161,165)

## Modulation Technology

### 802.11 Legacy a/b/g

- DSSS (DBPSK, DQPSK, CCK) OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
- DSSS (Direct Sequence Spread Spectrum) with DBPSK (Differential Binary Phase Shift Keying 1 Mbps), DQPSK (Differential Quaternary Phase Shift Keying 2 Mbps), and CCK (Complementary Code Keying 5.5 & 11 Mbps), and OFDM (Orthogonal Frequency Division Multiplexing with BPSK for 6, 9 Mbps. QPSK for 12, 18 Mbps, 16QAM for 24, 36 Mbps, 64QAM for 48, 54 Mbps)

### 802.11n

- OFDM (BPSK, QPSK, 16-QAM, 64-QAM)

### 802.11ac

- OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM)

### 802.11ax

- OFDMA (1024-QAM)

## Interfaces

- 1x 10/100/1000 Gigabit Ethernet
- 1x 2.5 mGig
- RJ-45 Console Port
- USB Interface
- 802.3az supported
- Redundant PoE Capable

## Radios

- Dual Radio AP, 2.4 GHz/5GHz and 5GHz radios supporting dual band or dual 5GHz operation
- 2.4 GHz/5 GHz, 802.11b/g/n/ax, 4x4
- 5 GHz, 802.11 a/n/ac/ax, 4x4
- 160 MHz, 1024-QAM supported
- 1x Bluetooth/Zigbee radio

## Power Consumption

- DC Power: Typical 18.78 W; Max 20.65 W
- 802.3at PoE Power: Typical 15.72 W; Max 19.92 W

## Environmental

- Operating Temperature: 0 to 40 °C
- Storage Temperature: -40 to 70 °C
- Humidity: 10 to 95%

## Physical

- Dimensions: 225mm x 225mm x 37.5mm
- Weight: 2.6lb (1.18kg)
- Wall or ceiling mountable
- MTBF: >500,000 Hours @ 25° C (*estimate*)
- RoHS: -2 Compliant
- TPM chip for added security

## Antenna

- 4x integrated dual band 2.4-2.5 GHz/5.1-5.8 GHz omnidirectional antennas
- 4x integrated single band, 5.1-5.8 GHz omnidirectional antennas
- 1x internal Bluetooth/ZigBee antenna

### Peak Antenna Gain:

- 2.4 GHz omnidirectional, gain 5.0 dBi
- 5 GHz omnidirectional, gain 6.0 dBi
- Bluetooth/ZigBee omnidirectional, gain 4.2 dBi

**Power - 2.4 GHz**

CHANNEL	DATA RATE	POWER (DBM)
<b>11b</b>	1,2,5,5,11 Mbps	18
	54 Mbps	15
<b>11g</b>	48 Mbps	16
	36 Mbps	17
	6 Mbps	18
	MCS0,1,2	18
<b>HE20</b>	MCS3	17
	MCS4,5	16
	MCS6,7	15
	MCS8,9	14
	MCS10,11	12
	MCS0,1,2	18
<b>HE40</b>	MCS3	17
	MCS4,5	16
	MCS6,7	15
	MCS8,9	14
	MCS10,11	12

**Receive Sensitivity - 2.4 GHz**

CHANNEL	DATA RATE	SENSITIVITY
<b>11b</b>	1 Mbps	-98
	11 Mbps	-90
<b>11g</b>	6 Mbps	-96
	54 Mbps	-78
<b>HE20</b>	MCS0	-95
	MCS11	-64
<b>HE40</b>	MCS0	-92
	MCS11	-62

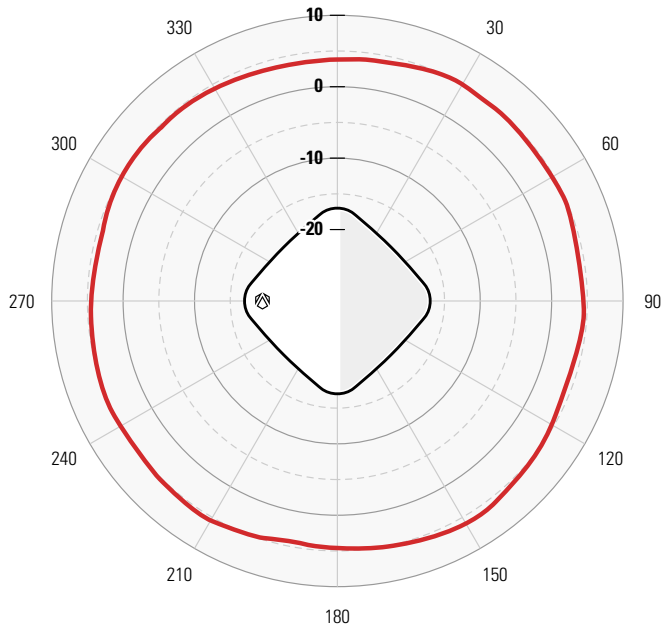
**Power - 5 GHz**

CHANNEL	DATA RATE	POWER (DBM)
<b>11a</b>	54 Mbps	17
	48 Mbps	17
	36 Mbps	18
	6 Mbps	19
<b>HE20</b>	MCS0,1,2	19
	MCS3,4	17
	MCS5,6	16
	MCS7,8	15
	MCS9	14
	MCS10	13
	MCS11	12
<b>HE40</b>	MCS0,1,2	17
	MCS3,4,5	16
	MCS6,7,8	15
	MCS9	14
	MCS10	13
	MCS11	12
<b>HE80</b>	MCS 0,1,2	17
	MCS 3,4,5	16
	MCS 6,7,8	15
	MCS 9	14
	MCS 10	13
	MCS 11	12
<b>HE160</b>	MCS 0,1,2	17
	MCS 3,4,5	16
	MCS 6,7,8	15
	MCS 9	14
	MCS 10	13
	MCS 11	12

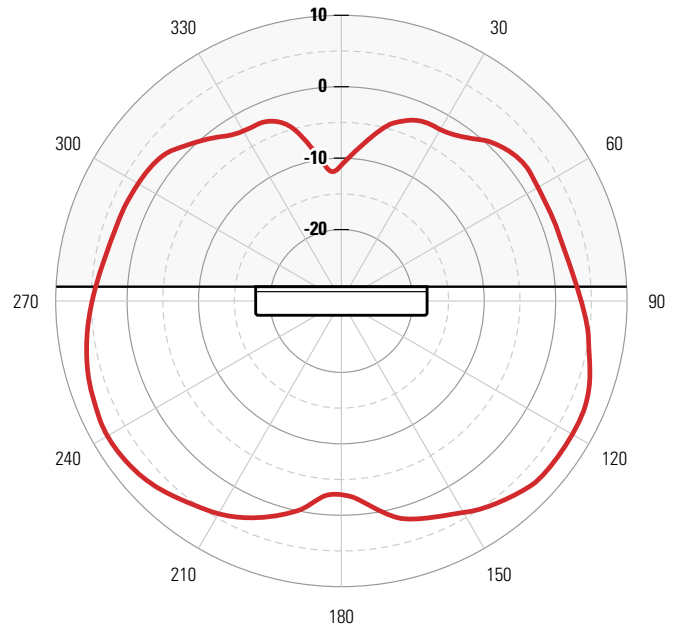
**Receive Sensitivity - 5 GHz**

CHANNEL	DATA RATE	SENSITIVITY
<b>11g</b>	6 Mbps	-86
	54 Mbps	-73
<b>HE20</b>	MCS0	-87
	MCS11	-58
<b>HE40</b>	MCS0	-88
	MCS11	-56
<b>HE80</b>	MCS0	-83
	MCS11	-53
<b>HE160</b>	MCS0	-82
	MCS11	-51

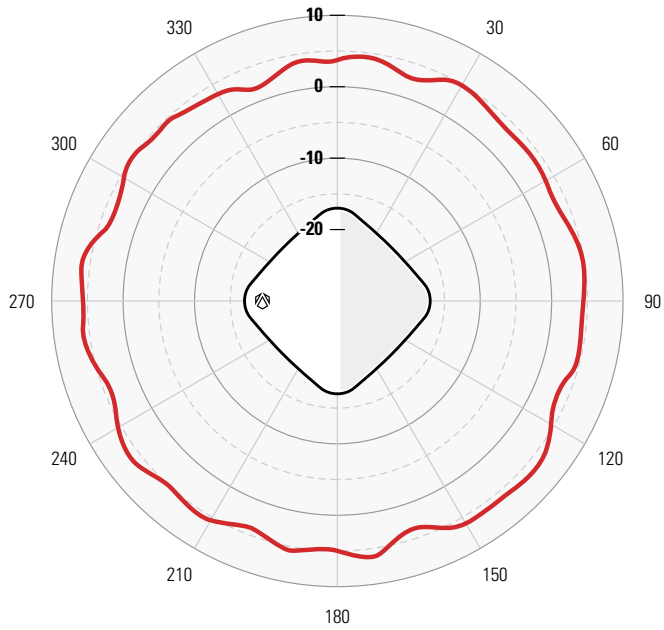
Azimuth - 2.4 GHz



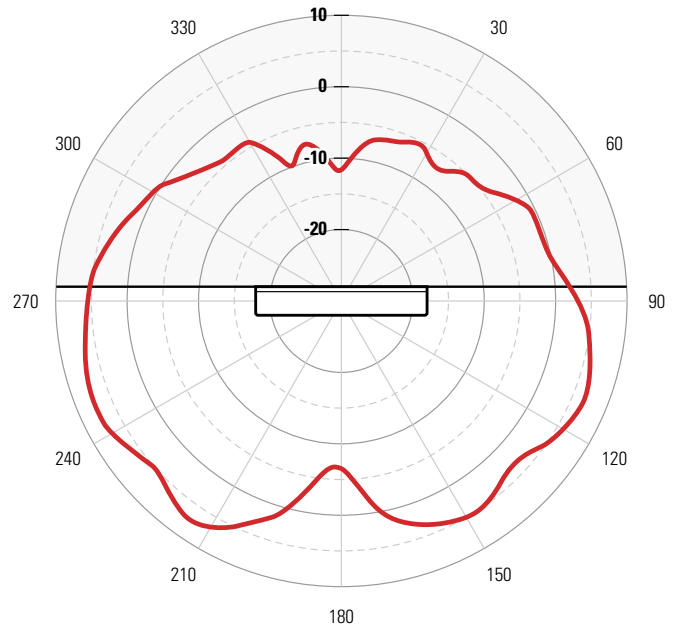
Elevation - 2.4 GHz



Azimuth - 5 GHz



Elevation - 5 GHz



**AP650 - SKUs**

SKU	DESCRIPTION
<b>AH-AP-650-AX-XX</b>	AP650 Indoor plenum rated AP, dual 5 GHz radio 4x4:4 802.11ac/ax AP, 1x NBASE-T™ Ethernet port and 1x GE Ethernet port, with internal antennas. Includes HiveManager Connect and HiveCare Community. (Regulatory Domains available: FCC, CE, W (World), CAN (Canada))

**AP650 - MISCELLANEOUS SKUs**

SKU	DESCRIPTION
<b>AH-ACC-INJ-30W-UK</b>	30W POE power injector with UK power cord for AP122,AP122X,AP130, AP200 series,AP550,AP630,AP650 and AP650X
<b>AH-ACC-INJ-30W-US</b>	30W POE power injector with US power cord for AP122,AP122X,AP130, AP200 series,AP550,AP630,AP650 and AP650X
<b>AH-ACC-INJ-30W-AU</b>	30W POE power injector with Australia/New Zealand power cord for AP122,AP122X,AP130, AP200 series,AP550,AP630,AP650 and AP650X
<b>AH-ACC-INJ-30W-EU</b>	30W POE power injector with EU power cord for AP122,AP122X,AP130, AP200 series,AP550,AP630,AP650 and AP650X
<b>AH-ACC-BKT-AX-IL</b>	Armstrong mounting bracket for Interlude ceiling for the AP650, AP650X, or AP630
<b>AH-ACC-BKT-AX-TB</b>	Replacement Prelude Bracket, T-Bar, Supported on AP630, AP650 and AP650X. Same as in-box accessory.
<b>AH-ACC-BKT-AX-SL</b>	Mounting bracket for Silhouette ceiling, 1/4" or 1/8". Supported on AP630, AP650 and AP650X.
<b>AH-ACC-BKT-AX-WL</b>	Bracket, Wall Mount, Supported on AP630, AP650 and AP650X.
<b>AH-ACC-PW-30W-US</b>	30W Power Supply for AP650/AP650X with US Power Plug
<b>AH-ACC-PW-30W-UK</b>	30W Power Supply for AP650/AP650X with UK Power Plug
<b>AH-ACC-PW-30W-EU</b>	30W Power Supply for AP650/AP650X with EU Power Plug
<b>AH-ACC-PW-30W-AU</b>	30W Power Supply for AP650/AP650X with Australia Power Plug
<b>AH-ACC-PW-30W-JP</b>	30W Power Supply for AP650/AP650X with Japan Power Plug
<b>AH-ACC-PW-30W-KR</b>	30W Power Supply for AP650/AP650X with Korea Power Plug